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## THE PURULENT CONJUNCTIVITIS OF INFANTS, AND BLINDNESS IN NEW YORK STATE.

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I DESIRE to call the attention of the Society to the fact that there is in the State of New York, as in the United States, an apparently rapid increase in the number of blind; that a very large proportion of blindness, here as elsewhere, is due to the purulent ophthalmia of infants; that by the use of methods already known this could be materially lessened, but in spite of that, no systematic effort is made to do so. I propose in this paper to take up these different points as briefly as possible and in the order mentioned. The subject of the rapid increase of blindness is considered in detail in the report of the committee on that special subject, which is presented to the Society at this meeting. As I had the honor of presenting that, I feel at liberty to refer to the same figures again, and to say that the reports of both the United States census and the State census indicate that blindness is increasing very much more rapidly than population. When we compare the Report of the United States Census of 1870 with the Report of 1880, we find that the population of New York in 1870 was 4,382,759, and in 1880 it was 5,082,871, being an increase of 15.9 per cent.; whereas the number of blind in New York State in 1870 was 2213, and in 1880 was 4981, being an increase of 125.07 per cent. In a similar way if we compare the State Census of 1875 with the United States Census of 1880, we find that the population in 1875 was 4,698,958, and in 1880 was 5,082,871, being an increase of 8.1 per cent.; while the number of blind in 1875 was 2256, and in 1880 was 4981, being an increase of 111.03 per cent.

In other words, official reports show that during the ten years preceding 1880 blindness in the State of New York increased eight and two-tenths times as rapidly as the population, and during the



last five years of that decade it increased thirteen and seven-tenths as rapidly. I think these figures are sufficient to show the importance of the subject without any comment of mine. It is not improbable that there were errors and imperfections in these statistics, the United States Census of 1880 being very complete, the others incomplete. But it is hardly possible that those differences in the manner of enumeration would account for more than a part of the increase as is here shown, and when the facts are taken up in detail and carefully weighed, one cannot but arrive at the conclusion that certain causes have tended to produce an increase of blindness out of proportion to the increase in population, and much greater than there is any necessity for.

In the second place I wish to show that the most important factor in the production of blindness is the ophthalmia of infants, or as it is otherwise called, the purulent ophthalmia or purulent conjunctivitis of children, or ophthalmia neonatorum. In this country, unfortunately, very few systematic investigations have been made as yet into the causes of blindness. It is probable, however, that the same diseases here produce the same results as elsewhere, and there is no reason to suppose that there is any less proportion of the ophthalmia of infants in America than in Europe. For our present study, therefore, we are entirely warranted in drawing conclusions from data obtained there. On examining any statistics concerning the causes of blindness, the results found will vary somewhat according to the age of the individuals, certain diseases like cataract, glaucoma, etc., belonging particularly to advanced life, and the one we are considering, of course, to early life. In a list of 2528 blind *of all ages*, collected by Magnus, it was found that the ophthalmia of infants was more destructive to vision than any other disease or form of accident, that causing 10.87 per cent. of the unfortunates.

To appreciate its true importance we should see how large a proportion of the blindness *among children* is due to that disease. Thus, Fuchs found that among 3204 cases of blindness collected from asylums in different parts of Europe, 23.5 per cent., or nearly one-quarter of the entire number, are doomed to lifelong darkness, because of the ophthalmia in infancy. In certain countries where all the inmates of all asylums are counted together, the proportion who have become blind from this disease is found to be even a little greater. Thus, all the asylums in Switzerland gave 26.02 per

cent.; all the asylums in Germany gave 25.83 per cent.; all the asylums in Austria-Hungary gave 20.47 per cent.<sup>1</sup>

In order to ascertain, in a similar manner, the influence of this disease and others in the production of blindness in this State, I made an examination (with the aid of my former assistant, Dr. Starr) of the eyes of 128 inmates of the New York Institution for the Blind, at Batavia. For each of these, one of the accompanying blanks was filled out and the results tabulated (diagrams shown). It was seen that here also the ophthalmia of infancy produced more havoc than any other disease, 23.4 per cent. being caused by it.

Next I wish to call attention to the fact that a very safe, simple, and reliable method is now known by which this disease can be, to a great extent, prevented, and to show how decided would be the advantages if it were thoroughly employed. The figures which I have given in regard to the blindness caused by the purulent ophthalmia of infants were collected largely from the examination of individuals born before Credé's method had come into general use even in Europe. At that time this large proportion of eyes were annually sacrificed to the disease. As early as 1874 or 1875 various forms of disinfectants had been used as preventives, but in 1880 Credé first began his method of treatment. That consists in a thorough cleansing of the eyes of the infant immediately after birth, and then applying a two per cent. solution of nitrate of silver. This is done only once, and in that consists the whole of the so-called "Credé's method." As for the reasons of this from a bacteriological point of view, it is out of place here to go into any detail, except to mention that as this solution of silver removes the superficial layer of epithelial cells, it probably destroys, at the same time, any germs which may be in them. Whatever theory there may be as to how the nitrate of silver acts, there is fortunately no question as to the practical results. This has been determined by exactly recorded cases which can be counted now, not by tens or hundreds, but by some thousands; not observed by one practitioner, but by many; and especially we have lists showing the effect of treatment without this method, as well as with it. I need not take these up in detail, but simply give the summary.

The following table gives on the left side the names of six different obstetricians, who used no treatment for the eyes of 8798

<sup>1</sup> Fuchs, *idem*, page 70.



children born in institutions of which they had charge or in private houses. Among these children there were 8.66 per cent. who had ophthalmia in a greater or less degree. In another list I have placed the results obtained by five observers, who directed the treatment of 8574 other children with a two per cent. solution of nitrate of silver. In these cases there were only 0.65 per cent.

AUTHOR.	Without precautions.		Two per cent. silver nitrate.	
	Total number of births.	Per cent.	Total number of births.	Per cent.
Olshausen . . . . .	550	12.5	.....	.....
Credé . . . . .	2897	10.8	1160	0.1-0.2
Königstein . . . . .	1092	4.8	1250	0.7
Krukenberg . . . . .	1266	7.3	703	0.14
Felsenreich . . . . .	1887	4.3	{ 1st period 3000 2d period 2100	1.9 1.0
Bayer . . . . .	1106	12.3	361	0
Total . . . . .	8798	.....	8574	.....
Average per cent. .	.....	8.66	.....	0.656

If any further evidence were required to show the advantage of these steps for preventing the wholesale blinding of children, I would cite the example of certain governments in their enactment of laws regulating such precautions.

In December, 1882, Austria recognized the advantages of Credé's method by its official recommendation to physicians in the State service;<sup>1</sup> and, according to section seventh of the directions for nurses in Austria, every midwife is required to call a physician to the patient whenever she finds that the child under her care develops the ophthalmia of infants.<sup>2</sup> The Hungarian Secretary of the Interior issued a pamphlet on the subject of the ophthalmia of infants, designed for distribution among the nurses of that country.<sup>3</sup> In Switzerland it is also obligatory upon them to give notice to the physician of the existence of any such disease. This was established as far back as 1865, and, according to Prof. Horner, of Zurich, not a

<sup>1</sup> Fuch's Verhütung der Blindheit, page 136.

<sup>2</sup> Id., page 140.

<sup>3</sup> Id., page 136.

single case of blindness from this cause in an individual born since then had entered the large asylum in that city up to the time of his death. The Prussian regulations for nurses for 1878 give particular directions and instructions concerning this important point, and in the French official directions for 1880 a note was inserted also calling attention to it.<sup>1</sup>

In view of this we may ask ourselves, What has been done or what is being done in this country, or particularly in the State of New York, for the prevention of this disease? The answer to this question can be brief: By individual effort, very little; by combined effort or by the State, absolutely nothing. And yet the same reasons exist, in a manifold stronger degree, why the same plan should be adopted in this country; why practitioners here should take advantage of the means already at their command for lessening the effects of this terrible scourge.

I think we are safe in speaking of blindness as a scourge, no matter from what standpoint it is viewed, whether of the economist or of the philanthropist. From the report of the committee to which I have referred, it will be seen that the blind cost the State of New York each year considerably over a million and a half of dollars, or exactly, \$1,791.169; and it is safe to say that at least one-fifth of the cases are due to the ophthalmia of infants; we can consider, at a moderate estimate, that simply the effects of this disease cost about three hundred thousand dollars every year.

It is out of place in a paper which treats only of the scientific phase of a subject to refer at any length to its importance viewed from the standpoint of the philanthropist; we have to do only with the medical aspect of the question. But in this respect it makes great demands upon us as physicians. For, if any mother were to decide the question for her child between lifelong blindness and death, she would in most cases prefer the latter. Now, if a remedy were known whereby the death-rate of those who suffer from a certain disease could be lessened several hundred per cent., there is no doubt that physicians would avail themselves of it immediately. But is it the case in this instance? I do not make a plea for Credé's method as the only one; it is possible that in a short time some still better treatment may be found. But I do say that as long as there is such a means of preventing misery at

<sup>1</sup> Page 135.



our command, and one which can be simply and efficiently employed, it is next to criminal negligence for any practitioner to omit the use of nitrate of silver in every case, without exception, which he attends. Perhaps there are those who think such a rule very good for obstetricians in charge of large institutions, but not necessary in private practice, and surely not for those whose patients are scattered over a large territory. It must be remembered, however, that only a very small part of the births occur in institutions, and the profession is quite as responsible for the health of patients outside of such places as it is for those inside. There are other practitioners, men of keen perception and large experience, who have told me that they could not believe that the ophthalmia of infants was so frequent. In a country practice, extending over a considerable territory, they see such cases only at rare intervals. It is true we are always surprised at the aggregate when the separate parts seem small, but it is often when the patient is at a distance, and the physician has almost if not entirely ceased his visits to the mother, that the disease in the child's eyes begins to make its appearance; the nurse imagines she can take charge of the rest, and the physician may not hear of the child again until blindness occurs. In just such a practice should Cr  d  's precaution be the invariable rule, and the necessity of it is shown by the fact that, as a rule, even more blindness exists in the sparsely settled countries than near the large cities in this State; there it is that the nurses have full control.

In view of these facts, I think it proper to submit the following as the course which we should pursue in combating this disease and attempting to lessen its effects: First. To call the attention of the profession in general to the apparent increase of blindness in this State and in the United States, to the importance of ophthalmia in children, and to the efficacy of proper means for preventing it. Second. To request the examiners of nurses and midwives to require of the candidates some knowledge of the dangers of the ophthalmia of infants and an acquaintance with the methods of prophylaxis now in use. Third. To instruct our committee on legislation to formulate and recommend the passage of a law by which all midwives in this State shall be obliged to report the existence of any case of infant ophthalmia within twenty-four hours after its occurrence, to the family physician, to the district physician, or to some legally qualified practitioner.<sup>1</sup>

<sup>1</sup> By unanimous vote of the Society this final recommendation was formally adopted.